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Integrated effect of atmosphere pollution and cutting on seed production of dandelion (Taraxacum officinale Wigg.) urban populations

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Abstract

© 2016, International Journal of Pharmacy and Technology. All rights reserved.We considered the influence of air pollution by road transport on the total number of seeds, seed weight and the formation of seeds able to germinate in the inflorescences of Taraxacum officinale Wigg cut off on the fourth day after flowering, and in the inflorescences formed on the parent plant. The monotonous dependence dose-response is characteristic for the seeds developed on the parent plant. The dependencies of other seed production indicators from air pollution intensity by motor traffic are nonmonotonic ones, which can be attributed to the paradoxical effects that appear brighter in the inflorescences cut off on the fourth day after flowering. The intensity of seed germination, formed on the mother plant, is also difficult and depends nonmonotonically on the degree of atmosphere contamination, but the seeds with the weight less than 0.25 mg are not developed. A significant influence on the relationship between the weight of seeds and their germination is made by negative impact factor duration. At the same weight (0,39 ± 0,02 mg) the maximum germination of the option "cut off florets" and a minimum one for the version "ripened on parent plant". At the same time a lot of seeds correlated with their germination differently. For the seeds ripened in the cut off inflorescences R2 = 0.80 (p = 0.00027), and for the seeds ripened on the parent plant R2 = 0.55 (p = 0.008). The critical mass of viable seeds for their germination in cut off inflorescences made 0.23 ± 0.007 mg, which is 10% more than a certain critical mass of Taraxacum officinale seeds stated earlier.

Keywords

Dose-response dependences, Motor traffic pollution, Plant paradoxical effects, Seed reproduction indices, Taraxacum officinale Wigg